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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

Mr. Tom Schneider
Ohio Environmental Protection Agency
Office of Federal Facility Oversight
40 South Main Street
Dayton, Ohio 45402-2086

REPLY TO THE ATTENTION OF: SRF-5J

Mr. Johnny W. Reising
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

RE: Technical Review Comments on
Letter Regarding Measurement and
Calculation of Thorium-232

Dear Mr. Schneider and Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the above-referenced letter as part of its oversight activities for the Fernald Environmental Management Project. The letter, which is dated November 20, 1997, was prepared by Fluor Daniel Fernald (FDF) for the U.S. Department of Energy (U.S. DOE).

U.S. EPA's review of the letter focused on its technical adequacy. Overall, U.S. EPA concurs with the contents of the letter; however, a few minor issues should be addressed. U.S. EPA's general review comments are enclosed.

Please contact me at (312) 886-4591 if you have any questions regarding this matter.

Sincerely,

Gene Jablonowski
Remedial Project Manager
Federal Facilities Section
SFD Remedial Response Branch #2

Enclosure

cc: Tom Schneider, OEPA-SWDO
Bill Murphie, U.S. DOE-HDO
John Bradburne, FERMCO
Terry Hagen, FERMCO
Tom Walsh, FERMCO

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bcc w/attachments:

Frances Barker, Tetra Tech

Scott Pastor, Tetra Tech

Jim Saric, SRF-5J

bcc w/o attachments:

Brian Barwick, ORC

Sue Pastor, OPA

TECHNICAL REVIEW COMMENTS ON LETTER REGARDING
MEASUREMENT AND CALCULATION OF THORIUM-232

GENERAL COMMENTS

Commenting Organization: U.S. EPA

Commentor: Jablonowski

Original General Comment #: 1

Comment: The isotopes proposed in the letter for determining thorium-232, radium-228, and thorium-228 concentrations are appropriate for use in gamma analysis. However, some clarification is necessary. For example, in the proposed approach, the same gamma lines are to be considered for thorium-232 and radium-228, and half of those lines are to be used for thorium-228 as well. Because these gamma lines extend to thallium-208, the entire chain is considered to be in secular equilibrium. If this is the case, the activities of thorium-232, radium-228, and thorium-228 would be identical. Although this situation may not present any health or environmental concerns, some distinction should be made between isotopes of concern. The letter should be revised to address this issue.

Commenting Organization: U.S. EPA

Commentor: Jablonowski

Original General Comment #: 2

Comment: Based on Original General Comment 1, the technical rationale presented in the letter is unclear. The text states that "only gamma emitting radionuclides below (in the decay chain) the analyte of interest and in secular equilibrium with the analyte of interest should be used in the activity concentration calculations." However, if secular equilibrium is assumed, as is suggested by the proposed gamma lines, it does not matter where an isotope exists in the decay series. The letter should be revised to clarify this matter.

Commenting Organization: U.S. EPA

Commentor: Jablonowski

Original General Comment #: 3

Comment: The letter suggests that the thallium-208 gamma lines of 511 and 2,615 kiloelectronvolts should be omitted as proposed by the Ohio Environmental Protection Agency. This approach is appropriate.